

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A process for preparing metal salt nanoparticles (10) in a liquid phase reaction, ~~in which~~ **comprising synthesizing** the nanoparticles ~~are synthesized~~ in a synthesis mixture and ~~grow~~ **growing the nanoparticles** during a synthesis period, ~~characterized by the step of~~ **said process further comprising** adding a modifying reagent (11) to the synthesis mixture within the synthesis period, with the modifying reagent exhibiting a functional property which is suitable for a subsequent use of the nanoparticles after the ~~synthesis~~ **synthesizing** has been concluded.

2. (Currently Amended) The process as claimed in claim 1, wherein the metal salt nanoparticles are substances which are selected from the ~~series comprising~~ **group consisting of** the halides, the alkaline earth metal sulfates, the phosphates and halophosphates, the borates, the vanadates, the aluminates, the silicates, the tungstates, the molybdates and the germanates, all of which can also, in addition, be doped with one or more elements of the lanthanides and/or Mn, Ag, Cu, Pb, Bi, Cr, Sn or Sb.

3. (Currently Amended) The process as claimed in claim 1, wherein the metal salt nanoparticles are substances selected from the series **the group consisting of:**
 - a) XY_2 (X = Mg, Ca, Sr, Ba; Y = F, Cl, I), $CaF_2:Eu(II)$, $BaF_2:Eu$, $BaMgF_4:Eu$, $LiBaF_3:Eu$, $SrF_2:Eu$, $SrBaF_2:Eu$, $CaBr_2:Eu-SiO_2$, $CaCl_2:Eu$, $CaCl_2:Eu-SiO_2$, $CaCl_2:Eu,Mn-SiO_2$, $CaI_2:Eu$, $CaI_2:Eu,Mn$, $KMgF_3:Eu$, $SrF_2:Eu(II)$, $BaF_2:Eu(II)$, YF_3 , $NaYF_4$,
 - b) XSO_4 (X = Mg, Ca, Sr, Ba), $SrSO_4:Eu$, $SrSO_4:Eu,Mn$, $BaSO_4:Eu$, $BaSO_4:Eu,Mn$, $CaSO_4$, $CaSO_4:Eu$, $CaSO_4:Eu,Mn$, and also in each case mixed

alkaline earth metal sulfates, ~~including these~~ optionally in combination with magnesium, ~~e.g., $\text{Ca}_2\text{MgSO}_4\text{:Eu,Mn}$,~~

- c) $\text{CaPO}_4\text{:Ce,Mn}$, $\text{Ca}_5(\text{PO}_4)_3\text{Cl:Ce,Mn}$, $\text{Ca}_5(\text{PO}_4)_3\text{F:Ce,Mn}$, $\text{SrPO}_4\text{:Ce,Mn}$, $\text{Sr}_5(\text{PO}_4)_3\text{Cl:Ce,Mn}$, $\text{Sr}_5(\text{PO}_4)_3\text{F:Ce,Mn}$, this also codoped with Eu(II) and Eu,Mn , $\alpha\text{-Ca}_3(\text{PO}_4)_2\text{:Eu}$; $\beta\text{-Ca}_3(\text{PO}_4)_2\text{:Eu,Mn}$; $\text{Ca}_5(\text{PO}_4)_3\text{Cl:Eu}$; $\text{Sr}_5(\text{PO}_4)_3\text{Cl:Eu}$; $\text{Ba}_{10}(\text{PO}_4)_6\text{Cl:Eu}$; $\text{Ba}_{10}(\text{PO}_4)_6\text{Cl:Eu,Mn}$, $\text{Ca}_2\text{Ba}_2(\text{PO}_4)_3\text{Cl:Eu}$; $\text{Ca}_5(\text{PO}_4)_3\text{F:Eu}^{2+}\text{X}^{3+}$; $\text{Sr}_5(\text{PO}_4)_3\text{F:Eu}^{2+}\text{X}^{3+}$ ($\text{X}=\text{Nd, Er, Ho, Tb}$); $\text{Ba}_5(\text{PO}_4)_3\text{Cl:Eu}$; $\beta\text{-Ca}_3(\text{PO}_4)_2\text{:Eu}$; $\text{CaB}_2\text{P}_2\text{O}_9\text{:Eu}$; $\text{CaB}_2\text{P}_2\text{O}_9\text{:Eu}$; $\text{Ca}_2\text{P}_2\text{O}_7\text{:Eu}$; $\text{Ca}_2\text{P}_2\text{O}_7\text{:Eu,Mn}$; $\text{Sr}_{10}(\text{PO}_4)_6\text{Cl}_2\text{:Eu}$; $(\text{Sr, Ca, Ba, Mg})_{10}(\text{PO}_4)_6\text{Cl}_2\text{:Eu}$; $\text{LaPO}_4\text{:Ce}$; CePO_4 ,
- d) LaBO_3 ; $\text{LaBO}_3\text{:Ce}$; $\text{ScBO}_3\text{:Ce}$ $\text{YAlBO}_3\text{:Ce}$; $\text{YBO}_3\text{:Ce}$; $\text{Ca}_2\text{B}_5\text{O}_9\text{Cl:Eu}$; $x\text{EuO}_y\text{Na}_2\text{OzB}_2\text{O}_{3,1}$
- e) YVO_4 , $\text{YVO}_4\text{:Eu}$, $\text{YVO}_4\text{:Dy}$, $\text{YVO}_4\text{:Sm}$, $\text{YVO}_4\text{:Bi}$; $\text{YVO}_4\text{:Bi,Eu}$, $\text{YVO}_4\text{:Bi,Dy}$, $\text{YVO}_4\text{:Bi,Sm}$, $\text{YVO}_4\text{:Tm}$, $\text{YVO}_4\text{:Bi,Tm}$, GdVO_4 , $\text{GdVO}_4\text{:Eu}$, $\text{GdVO}_4\text{:Dy}$, $\text{GdVO}_4\text{:Sm}$, $\text{GdVO}_4\text{:Bi}$; $\text{GdVO}_4\text{:Bi,Eu}$, $\text{GdVO}_4\text{:Bi,Dy}$, $\text{GdVO}_4\text{:Bi,Sm}$,
- f) $\text{MgAl}_2\text{O}_4\text{:Eu}$; $\text{CaAl}_2\text{O}_4\text{:Eu}$; $\text{SrAl}_2\text{O}_4\text{:Eu}$; $\text{BaAl}_2\text{O}_4\text{:Eu}$; $\text{LaMgAl}_{11}\text{O}_{19}\text{:Eu}$; $\text{BaMgAl}_{10}\text{O}_{17}\text{:Eu}$; $\text{BaMgAl}_{10}\text{O}_{17}\text{:Eu, Mn}$; $\text{CaAl}_{12}\text{O}_{19}\text{:Eu}$; $\text{SrAl}_{12}\text{O}_{19}\text{:Eu}$; $\text{SrMgAl}_{10}\text{O}_{17}\text{:Eu}$; $\text{Ba}(\text{Al}_2\text{O}_3)_6\text{:Eu}$; $(\text{Ba,Sr})\text{MgAl}_{10}\text{O}_{17}\text{:Eu, Mn}$; $\text{CaAl}_2\text{O}_4\text{:Eu,Nd}$; $\text{SrAl}_2\text{O}_4\text{:Eu, Dy}$; $\text{Sr}_4\text{Al}_{14}\text{O}_{25}\text{:Eu,Dy}$,
- g) $\text{BaSrMgSi}_2\text{O}_7\text{:Eu}$; $\text{Ba}_2\text{MgSiO}_7\text{:Eu}$; $\text{BaMg}_2\text{Si}_2\text{O}_7\text{:Eu}$; $\text{CaMgSi}_2\text{O}_6\text{:Eu}$; $\text{SrBaSiO}_4\text{:Eu}$; $\text{Sr}_2\text{Si}_3\text{O}_8\text{:SrCl}_2\text{:Eu}$; $\text{Ba}_5\text{SiO}_4\text{Br}_6\text{:Eu}$; $\text{Ba}_5\text{SiO}_4\text{Cl}_6\text{:Eu}$; $\text{Ca}_2\text{MgSi}_2\text{O}_7\text{:Eu}$; $\text{CaAl}_2\text{Si}_2\text{O}_8\text{:Eu}$; $\text{Ca}_{1.5}\text{Sr}_{0.5}\text{MgSi}_2\text{O}_7\text{:Eu}$; $(\text{Ca,Sr})_2\text{MgSi}_2\text{O}_7\text{:Eu}$, $\text{Sr}_2\text{LiSiO}_4\text{F:Eu}$,
- h) X_3WO_6 ($\text{X} = \text{Mg, Ca, Sr, Ba}$), X_2WO_4 ($\text{X} = \text{Li, Na, K, Rb, Cs}$), XMoO_4 ($\text{X} = \text{Mg, Ca, Sr, Ba}$) and also polymolybdates or polytungstates and/or the salts of the corresponding hetero- or isopoly acids,
- i) Zn_2GeO_4 ,

j) the following compounds: $\text{ALnO}_2\text{:Yb, Er}$ ($\text{A} = \text{Li, Na; Ln} = \text{Gd, Y, Lu}$);
 $\text{Ln}_2\text{O}_3\text{:Yb, Er}$ ($\text{Ln} = \text{La, Gd, Y, Lu}$); $\text{LnAO}_4\text{:Yb, Er}$ ($\text{Ln} = \text{La, Y; A} = \text{P, V, As, Nb}$); $\text{Ca}_3\text{Al}_2\text{Ge}_3\text{O}_{12}\text{:Er}$; $\text{Gd}_2\text{O}_2\text{S:Yb, Er}$; $\text{La}_2\text{S:Yb, Er}$;

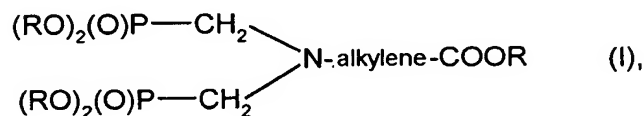
all of which can also, in addition, be doped with one or more elements of the lanthanides and/or Mn, Ag, Cu, Pb, Bi, Cr, Sn or Sb.

4. (Currently Amended) The process as claimed in claim 2 ~~or 3~~, wherein the concentration of the doping elements in the a host lattice is between 10^{-5} mol% and 50 mol%, ~~preferably between 0.01 mol% and 30 mol%, particularly preferably between 0.1 mol% and 20 mol%.~~

5. (Currently Amended) The process as claimed in claims 1 ~~to 4~~, wherein the subsequent use comprises the dispersion of the modified nanoparticles in a solvent which is specially selected with a view to the application.

6. (Currently Amended) The process as claimed in ~~one of~~ claims 1 ~~to 5~~, wherein the modifying reagent also exhibits a growth-controlling function in order to selectively control both the growth of the nanoparticles and the functionality of the surface, by means of binding to the nanoparticle surface.

7. (Currently Amended) The process as claimed in ~~one of claims 1 to 5~~ claim 1, wherein use is made, as modifying reagent ~~(11)~~, of a pentaalkyl iminobis-(methylenephosphono)carboxylate of the formula I:

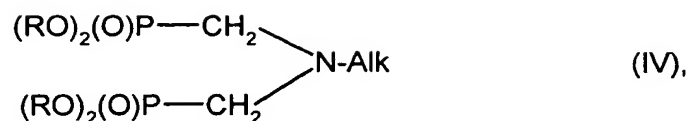


where

R is a C₁-C₄-alkyl radical, and

alkylene is a C₁-C₂₂-alkylene radical or C₇-C₂₀-alkylenearylene radical, preferably a C₅-C₁₇-alkylene radical, which can be linear or branched and can, in addition, carry, as additional substituents, halogen atoms, COOR groups, alkoxy groups, bis(dialkoxyposphorylmethyl)amino groups or aryl radicals.

8. (Currently Amended) The process as claimed in ~~one of claims 1 to 5~~ claim 1, wherein use is made, as modifying reagent (11), of a pentaethyl or a pentaisopropyl iminobis-(methylenephosphono) undecanoate.
9. (Currently Amended) The process as claimed in ~~one of claims 1 to 5~~ claim 1, wherein use is made, as modifying reagent (11), of a pentaethyl or pentaisopropyl iminobis-(methylenephosphono)caproate.
10. (Currently Amended) The process as claimed in ~~the preceding~~ claims 1 to 9, wherein the time which elapses during the synthesis period before the modifying reagent (11) is added is directly proportional to ~~the~~ a planned average size of the nanoparticles.
11. (Currently Amended) ~~The use~~ Method of using of compounds of the formula IV as modifying reagent (11) for preparing metal salt nanoparticles in accordance with the process as claimed in claims 1 to 4:



where

R has the meaning given above with regard to formula (I), and

Alk is a C₄-C₂₂-alkyl radical or C₇-C₃₀ aralkyl or arylalkyl radical.

12. (Currently Amended) ~~The use of~~ Method of using the nanoparticles which are prepared as claimed in ~~one of the preceding claims 1 to 10~~ claim 1 for coupling to biologically relevant molecules for the purpose of marking them.

13. (Currently Amended) ~~The use of~~ Method of using the nanoparticles which are prepared as claimed in ~~one of the preceding claims 1 to 10~~ claim 1 for a subsequent intended application which requires the nanoparticles to be coupled to application-specific molecules, with the coupling being selectively promoted or made possible by means of one of the functional properties of the modifying reagent ~~(11)~~.

14. (New) The process as claimed in claim 2, wherein the concentration of doping elements in a host lattice is between 0.01 mol% and 30 mol%.

15. (New) The process as claimed in claim 2, wherein the concentration of doping elements in a host lattice is between 0.1 mol% and 20 mol%.